

III. CLAIM AMENDMENTS

1- 27. (Cancelled)

28. (New) A method of encoding video frames to produce encoded video frames, each encoded video frame being represented by a bit-stream, the bit-stream representative of an encoded video frame comprising high and low priority information, decoding of at least some of the low priority information from a bit-stream depending on decoding of at least some of the high priority information from the bit-stream, the method comprising:

encoding a first video frame to form a first encoded video frame, the first encoded video frame being represented by a first bit-stream comprising high and low priority information representative of the first video frame,

forming a first complete reference frame by decoding the high and low priority information from the first bit-stream; and

forming a first virtual reference frame using the high priority information decoded from the first bit-stream in the absence of at least some of the low priority information.

29. (New) A method according to claim 28, further comprising:

encoding a second video frame to form a second encoded video frame, the second encoded video frame being represented by a second bit-stream;

forming a second complete reference frame by decoding the high and low priority information from the second bit-stream;

forming a second virtual reference frame using the high priority information decoded from the second bit-stream in the absence of at least some of the low priority information;

encoding a third video frame to form a third encoded video frame based on the second virtual reference frame instead of the second complete reference frame.

30. (New) A method according to claim 28, further comprising encoding a second video frame to form a second encoded video frame with reference to the first virtual reference frame.

31. (New) A method according to claim 28 further comprising encoding a subsequent video frame using temporal prediction from a directly preceding virtual reference frame rather than a directly preceding complete reference frame.

32. (New) A method according to claim 31 further comprising the step of selecting a particular reference frame amongst a plurality of choices to predict another frame.

33. (New) A method according to claim 28 further comprising associating each video frame with a plurality of different virtual reference frames, each representing a different way to classify the bit-stream for the video frame.

34. (New) A method according to claim 28, wherein the first video frame is encoded using temporal prediction with respect to a preceding complete reference frame.

35. (New) A method according to claim 28, wherein the first video frame is encoded using temporal prediction with respect to a preceding virtual reference frame.

36. (New) A method according to claim 28 further comprising forming the first complete reference frame using the high priority and low priority information decoded from the first bit-stream and with reference to a preceding complete reference frame.

37. (New) A method according to claim 28 further comprising forming the first virtual reference frame using the high priority information decoded from the first bit-stream in the absence of at least some of the low priority information and with reference to a preceding virtual reference frame.

38. (New) A method according to claim 28 further comprising the step of forming an encoded video frame on the basis of one of a multiplicity of reference frames.

39. (New) A method according to claim 29 further comprising the step of signaling in the bit-stream the selection of a particular reference frame.

40. (New) A method according to claim 30 further comprising the step of signaling in the bit-stream the selection of a particular reference frame.

41. (New) A method of encoding video frames to produce encoded video frames, each encoded video frame being represented by a bit-stream, the bit-stream representative of a video frame comprising high and low priority information, decoding of at least some of the low priority information from a bit-stream depending on decoding of at least some of the high priority information from the bit-stream, the method comprising:

encoding a first video frame to form a first encoded video frame, the first encoded video frame being represented by a first bit-stream comprising high and low priority information representative of the first video frame; and

forming a first virtual reference frame by decoding the high priority information from the first bit-stream in the absence of at least some of the low priority information.

42. (New) A method according to claim 28 further comprising providing within the first bit-stream an indicator indicative of the high priority information used in forming the first virtual reference frame.

43. (New) A method according to claim 28 further comprising forming the first virtual reference frame partly based on default values.

44. (New) A method of processing encoded video frames to produce reconstructed video frames, each reconstructed video frame corresponding to an encoded video frame, each encoded video frame being represented by a bit-stream, the bit-stream representative of an encoded video frame comprising high and low priority information, decoding of at least some of the low priority information from a bit-stream depending on decoding of at least some of the high priority information from the bit-stream, the method comprising:

receiving a first encoded video frame, the first encoded video frame being represented by a first bit-stream, the first bit-stream comprising high and low priority information;

reconstructing the first video frame by decoding the high and low priority information from the first bit-stream;

storing the first reconstructed video frame as a complete reference frame; and

forming a first virtual reference frame using the high priority information decoded from the first bit-stream in the absence of at least some of the low priority information.

45. (New) A method according to claim 44 further comprising:

receiving a second encoded video frame, the second encoded video frame being represented by a second bit-stream, the second bit-stream comprising high and low priority information;

reconstructing the second video frame by decoding the high and low priority information from the second bit-stream;

storing the second reconstructed video frame as a second complete reference frame;

forming a second virtual reference frame using the high priority information decoded from the second bit-stream in the absence of at least some of the low priority information;

receiving a third encoded video frame, the third encoded video frame being represented by a third bit-stream, the third bit-stream comprising high and low priority information; and

reconstructing the third video frame based on the second virtual reference frame instead of the second complete reference frame.

46. (New) A method according to claim 44 further comprising reconstructing a second video frame to form a second reconstructed video frame with reference to the first virtual reference frame.

47. (New) A method according to claim 44 further comprising reconstructing a subsequent video frame using temporal prediction from a directly preceding virtual reference frame rather than a directly preceding complete reference frame.

48. (New) A method according to claim 47 further comprising selecting a particular reference frame amongst a plurality of choices to predict another frame.

49. (New) A method according to claim 44 further comprising associating each encoded video frame with a plurality of different virtual reference frames, each representing a different way to interpret the bit-stream for the encoded video frame.

50. (New) A method according to claim 44, wherein the first reconstructed video frame is reconstructed using temporal prediction with respect to a preceding complete reference frame.

51. (New) A method according to claim 44, wherein the first reconstructed video frame is reconstructed using temporal prediction with respect to a preceding virtual reference frame.

52. (New) A method according to claim 44 further comprising reconstructing the first video frame using the high priority and low priority information decoded from the first bit-stream and with reference to a preceding complete reference frame.

53. (New) A method according to claim 44 further comprising forming the first virtual reference frame using the high priority information decoded from the first bit-stream in the absence of at least some of the low priority information and with reference to a preceding virtual reference frame.

54. (New) A method according to claim 44 further comprising reconstructing an encoded video frame on the basis of one of a multiplicity of reference frames.

55. (New) A method according to claim 45 further comprising the step of extracting from the bit-stream an indication of a particular reference frame.

56. (New) A method according to claim 46 further comprising the step of extracting from the bit-stream an indication of a particular reference frame.

57. (New) A method of processing encoded video frames to produce reconstructed video frames, each reconstructed video frame corresponding to an encoded video frame, each encoded video frame being represented by a bit-stream, the bit-stream representative of a video frame comprising high and low priority information, decoding of at least some of the low priority information from a bit-stream depending on decoding of at least some of the high priority information from the bit-stream, the method comprising:

reconstructing a first video frame from a first encoded video frame to form a first reconstructed video frame, the first encoded video frame being represented by a first bit-stream comprising high and low priority information representative of the first video frame; and

forming a first virtual reference frame by decoding the high priority information from the first bit-stream in the absence of at least some of the low priority information.

58. (New) A method according to claim 44 further comprising forming the first virtual reference frame partly based on default values.

59. (New) An encoder for encoding video frames to produce encoded video frames, each encoded video frame being represented by a bit-stream, the bit-stream representative of an encoded video frame comprising high and low priority information, decoding of at least some of the low priority information from a bit-stream depending on decoding of at least some of the high priority information from the bit-stream,

the encoder being arranged to:

encode a first video frame to form a first encoded video frame, the first encoded video frame being represented by a first bit-stream comprising high and low priority information representative of the first video frame;

form a first complete reference frame by decoding the high and low priority information from the first bit-stream; and

form a first virtual reference frame using the high priority information decoded from the first bit-stream in the absence of at least some of the low priority information.

60. (New) An encoder according to claim 59, wherein the encoder is arranged to:

encode a second video frame to form a second encoded video frame, the second encoded video frame being represented by a second bit-stream;

form a second complete reference frame by decoding the high and low priority information from the second bit-stream;

form a second virtual reference frame using the high priority information decoded from the second bit-stream in the absence of at least some of the low priority information;

encode a third video frame to form a third encoded video frame based on the second virtual reference frame instead of the second complete reference frame.

61. (New) An encoder according to claim 59, wherein the encoder is arranged to encode a second video frame to form a second encoded video frame with reference to the first virtual reference frame.

62. (New) An encoder according to claim 59, wherein the encoder is arranged to encode a subsequent video frame using temporal prediction from a directly preceding virtual reference frame rather than a directly preceding complete reference frame.

63. (New) An encoder according to claim 62, wherein the encoder is arranged to select a particular reference frame amongst a plurality of choices to predict another frame.

64. (New) An encoder according to claim 59, wherein the encoder is arranged to associate each video frame with a plurality of different virtual reference frames, each representing a different way to classify the bit-stream for the video frame.

65. (New) An encoder according to claim 59, wherein the encoder is arranged to encode the first video frame using temporal prediction with respect to a preceding complete reference frame.

66. (New) An encoder according to claim 59, wherein the encoder is arranged to encode the first video frame using temporal prediction with respect to a preceding virtual reference frame.

67. (New) An encoder according to claim 59, wherein the encoder is arranged to form the first complete reference frame using the high priority and low priority information decoded from the first bit-stream and with reference to a preceding complete reference frame.

68. (New) An encoder according to claim 59, wherein the encoder is arranged to form the first virtual reference frame using the high priority information decoded from the first bit-stream in the absence of at least some of the low priority information and with reference to a preceding virtual reference frame.

69. (New) An encoder according to claim 59, wherein the encoder is arranged to form an encoded video frame on the basis of one of a multiplicity of reference frames.

70. (New) An encoder according to claim 60, wherein the encoder is arranged to signal in the bit-stream the selection of a particular reference frame.

71. (New) An encoder according to claim 61, wherein the encoder is arranged to signal in the bit-stream the selection of a particular reference frame.

72. (New) An encoder for encoding video frames to produce encoded video frames, each encoded video frame being represented by a bit-stream, the bit-stream representative of a video frame comprising high and low priority information, decoding of at least some of the low priority information from a bit-stream depending on decoding of at least some of the high priority information from the bit-stream,

the encoder being arranged to:

encode a first video frame to form a first encoded video frame, the first encoded video frame being represented by a first bit-stream comprising high and low priority information representative of the first video frame; and

form a first virtual reference frame by decoding the high priority information from the first bit-stream in the absence of at least some of the low priority information.

73. (New) An encoder according to claim 59, wherein the encoder is arranged to provide within the first bit-stream an indicator

indicative of the high priority information used in forming the first virtual reference frame.

74. (New) An encoder according to claim 59, wherein the encoder is arranged to form the first virtual reference frame partly based on default values.

75. (New) A decoder for processing encoded video frames to produce reconstructed video frames, each reconstructed video frame corresponding to an encoded video frame, each encoded video frame being represented by a bit-stream, the bit-stream representative of an encoded video frame comprising high and low priority information, decoding of at least some of the low priority information from a bit-stream depending on decoding of at least some of the high priority information from the bit-stream,

the decoder being arranged to:

receive a first encoded video frame, the first encoded video frame being represented by a first bit-stream, the first bit-stream comprising high and low priority information,

reconstruct the first video frame by decoding the high and low priority information from the first bit-stream;

store the first reconstructed video frame as a complete reference frame; and

form a first virtual reference frame using the high priority information decoded from the first bit-stream in the absence of at least some of the low priority information.

76. (New) A decoder according to claim 75, wherein the decoder is arranged to:

receive a second encoded video frame, the second encoded video frame being represented by a second bit-stream, the second bit-stream comprising high and low priority information;

reconstruct the second video frame by decoding the high and low priority information from the second bit-stream;

store the second reconstructed video frame as a second complete reference frame;

form a second virtual reference frame using the high priority information decoded from the second bit-stream in the absence of at least some of the low priority information;

receive a third encoded video frame, the third encoded video frame being represented by a third bit-stream, the third bit-stream comprising high and low priority information; and

reconstruct the third video frame based on the second virtual reference frame instead of the second complete reference frame.

77. (New) A decoder according to claim 75, wherein the decoder is arranged to reconstruct a second video frame to form a second

reconstructed video frame with reference to the first virtual reference frame.

78. (New) A decoder according to claim 75, wherein the decoder is arranged to reconstruct a subsequent video frame using temporal prediction from a directly preceding virtual reference frame rather than a directly preceding complete reference frame.

79. (New) A decoder according to claim 78, wherein the decoder is arranged to select a particular reference frame amongst a plurality of choices to predict another frame.

80. (New) A decoder according to claim 75, wherein the decoder is arranged to associate each encoded video frame with a plurality of different virtual reference frames, each representing a different way to interpret the bit-stream for the encoded video frame.

81. (New) A decoder according to claim 75, wherein the decoder is arranged to reconstruct the first reconstructed video frame using temporal prediction with respect to a preceding complete reference frame.

82. (New) A decoder according to claim 75, wherein the decoder is arranged to reconstruct the first reconstructed video frame using temporal prediction with respect to a preceding virtual reference frame.

83. (New) A decoder according to claim 75, wherein the decoder is arranged to reconstruct the first video frame using the high priority and low priority information decoded from the first bit-stream and with reference to a preceding complete reference frame.

84. (New) A decoder according to claim 75, wherein the decoder is arranged to form the first virtual reference frame using the high priority information decoded from the first bit-stream in the absence of at least some of the low priority information and with reference to a preceding virtual reference frame.

85. (New) A decoder according to claim 75, wherein the decoder is arranged to reconstruct an encoded video frame on the basis of one of a multiplicity of reference frames.

86. (New) A decoder according to claim 76, wherein the decoder is arranged to extract from the bit-stream an indication of a particular reference frame.

87. (New) A decoder according to claim 77, wherein the decoder is arranged to extract from the bit-stream an indication of a particular reference frame.

88. (New) A decoder for processing encoded video frames to produce reconstructed video frames, each reconstructed video frame corresponding to an encoded video frame, each encoded video frame being represented by a bit-stream, the bit-stream

representative of a video frame comprising high and low priority information, decoding of at least some of the low priority information from a bit-stream depending on decoding of at least some of the high priority information from the bit-stream,

the decoder being arranged to:

reconstruct a first video frame from a first encoded video frame to form a first reconstructed video frame, the first encoded video frame being represented by a first bit-stream comprising high and low priority information representative of the first video frame; and

form a first virtual reference frame by decoding the high priority information from the first bit-stream in the absence of at least some of the low priority information.

89. (New) A decoder according to claim 75, wherein the decoder is arranged to form the first virtual reference frame partly based on default values.

90. (New) A video communications terminal comprising a video encoder for encoding first and second video frames, the video encoder comprising:

a frame encoder arranged to encode the first video frame to form a first encoded video frame, the first encoded video frame being represented by a bit-stream, the bit-stream representative of the first encoded video frame comprising high and low priority information, decoding of at least some of the low priority information from the bit-stream

depending on decoding of at least some of the high priority information from the bit-stream, the frame encoder further arranged to decode the first encoded video frame using the high priority information and the low priority information of the first encoded video frame; and

a virtual frame constructor arranged to decode the first encoded video frame using the high priority information for the first encoded video frame, in the absence of at least some of the low priority information for the first encoded video frame, to form a first virtual reference frame;

wherein the frame encoder is arranged to encode the second video frame based on the first virtual reference frame.

91. (New) A video communications terminal comprising a video decoder for decoding first and second encoded video frames, each encoded video frame being represented by a bit-stream, the bit-stream representative of an encoded video frame comprising high and low priority information, decoding of at least some of the low priority information from a bit-stream depending on decoding of at least some of the high priority information from the bit-stream, the video decoder comprising:

a complete frame decoder arranged to decode the first encoded video frame based on the high and low priority information of the first encoded video frame, to form a complete reference frame;

a virtual frame decoder arranged to decode the first encoded video frame using the high priority information of the first

encoded video frame, in the absence of at least some of the low priority information for the first encoded video frame, to form a first virtual reference frame;

wherein the complete frame decoder is further arranged to decode the second encoded video frame based on the first virtual reference frame.

92. (New) A computer program for operating a computer as a video encoder to encode first and second video frames, each encoded video frame being represented by a bit-stream, the bit-stream representative of an encoded video frame comprising high and low priority information, decoding of at least some of the low priority information from a bit-stream depending on decoding of at least some of the high priority information from the bit-stream, the computer program comprising:

computer program code for encoding a first video frame to form a first encoded video frame, the first encoded video frame comprising high priority information and low priority information, to form a first complete reference frame;

computer program code for decoding the first encoded video frame using the high priority information and the low priority information of the first encoded video frame;

computer program code for decoding the first encoded video frame using the high priority information of the first encoded video frame, in the absence of at least some of the low priority information of the first encoded video frame, to form a first virtual reference frame; and

computer program code for encoding the second video frame based on the first virtual reference frame.

93. (New) A computer program for operating a computer as a video decoder for decoding first and second encoded video frames, each encoded video frame being represented by a bit-stream, the bit-stream representative of an encoded video frame comprising high and low priority information, decoding of at least some of the low priority information from a bit-stream depending on decoding of at least some of the high priority information from the bit-stream, the computer program comprising:

computer program code for decoding the first encoded video frame, based at least in part on the high and low priority information of the first encoded video frame;

computer program code for decoding the first encoded video frame, using the high priority information of the first encoded video frame and in the absence of at least some of the low priority information of the first encoded video frame to form a first virtual reference frame;

computer program code for decoding the second encoded video frame based on the first virtual reference frame.

94. (New) A bit-stream representative of an encoded video frame, the encoded video frame comprising high and low priority information, decoding of at least some of the low priority information from the bit-stream depending on decoding of at least some of the high priority information from the bit-stream, the

bit-stream comprises an indication for use by a decoder in determining which high priority information has been used in forming a virtual reference frame by an encoder, wherein said virtual reference frame has been formed by the encoder using the high priority information decoded from the bit-stream in the absence of at least some of the low priority information.